Draft Outline for the Bristol Bay Assessment

The following is a draft outline for the USEPA's Bristol Bay Assessment. The objective of this assessment is to evaluate how future large-scale mining development projects may affect water quality and Bristol Bay's salmon fishery. The geographic scope of this assessment is focused on the Nushagak and Kvichak watersheds of Bristol Bay.

The overall assessment represents an integration of several types of assessment efforts, defined immediately below and represented in the draft outline which follows. The first component is an assessment of condition. This resource characterization (Sections II and III of the outline), synthesizes current conditions within the watersheds of Bristol Bay and determines that condition relative to comparable regional or other reference conditions. The characterization assessment is focused on determining if the Nushagak and Kvichak watersheds of Bristol Bay represent an exceptional resource that might be worthy of special protection. If determined to be an exceptional resource, the characterization assessment will identify those factors in the watershed that make it an exceptional resource. The characterization assessment thus identifies what must be protected to retain an exceptional status.

The second component of the assessment is a predictive risk assessment. It is devoted to estimating the effects of mining on salmon and other non-salmon fish and on the wildlife and humans who benefit from them, based on a generic mining scenario. It is organized on the established Agency frameworks for ecological and cumulative risk assessments. The proposed mining scenario represented in Section IV of the outline, and the results of the predictive risk assessment are provided in Sections V and VI. Risk Characterization (Section VI) includes uncertainties and cumulative risks.

Bristol Bay Assessment Outline

Introduction (including prologue and background)

I. Problem Formulation
- Region of Concern
  - Physical environment
  - Ecosystem types and biota
- Reference Regions
  - Fraser River Watershed
  - Others
- Assessment Endpoints
  - Salmon production, genetic diversity and quality
  - Other fish production and quality
  - Wildlife abundance
  - Indigenous culture
- Conceptual Model

II. Characterization of Current Condition
(**Status** is the quality or quantity of the resource or human cultural attribute relative to others such as the Fraser River basin. That is, is it unique or outstanding in some way? **Cause** is the cause of that status. That is, what about Bristol Bay results in its unique or outstanding properties? For example, the abundance and quality of lake habitats cause it to be the largest Sockeye fishery.)
- Salmon
  - Condition
  - Status
  - Causes
- Other Fish
  - Condition
  - Status
  - Causes
- Wildlife
  - Condition
  - Status
  - Causes
- Marine Mammals
  - Condition
  - Status
  - Causes
- Indigenous culture
  - Condition
  - Status
  - Causes
- Economy
  - Condition

- Status
- Causes

III. Generic Large-Scale Mining Development Scenario
- Mining
- Waste rock disposal
- Tailings disposal
- Roads
- Pipelines
- Ore processing
- Water withdrawal
- Water addition
- Onsite power generation
- Activities not included
  - Underground mining (tunneling)
  - Offsite power generation
  - Port
  - Secondary development (developments prompted by mine development but not by the mine operator)

Accident and Failure Scenarios
- Tailings pond leakage
- Tailings pond failure
- Pit lake acidification
- Pipeline failure
- Chemical or fuel spill

Assessment Endpoints
- Salmon production, genetic diversity and quality
- Other fish production and quality
- Wildlife abundance
- Indigenous culture

IV. Risk Assessment Analysis—Routine Operations

Salmon and other fish
- Physical footprint
- Hydrology and Stream Habitat Alteration
- Water quality

Wildlife
- Responses to effects on fish

Human health, welfare and culture
- Responses to effects on fish

V. Risk Assessment Analysis—Accidents and Failures
- Salmon and other fish
  - Tailings pond leakage
  - Tailings pond failure
  - Pit lake acidification
  - Pipeline failure
  - Chemical spill
- Wildlife
  - Responses to effects on fish
- Indigenous culture
  - Responses to effects on fish

VI. Risk Characterization (organized by identified endpoints)
- Salmon
- Other fish
- Wildlife
- Indigenous culture

VII. Cumulative impacts (qualitative, including secondary development)

VIII. References